b) Remarks

Turning first to the Office Action Summary Sheet, Claims 1-19 are pending in this application. Claims 14-19 have been withdrawn from consideration. The drawings filed on October 27, 2003 are accepted by the Examiner.

Turning now to the merits, the remainder of these remarks is set forth under appropriate subheadings for the convenience of the Examiner.

Rejection of Claims 1, 2, 4, 5 and 7-13 under 35 U.S.C. 103(a)

Claims 1, 2, 4, 5 and 7-13 were rejected under 35 U.S.C. 103(a) over Bewersdorf (US 2002/0105722) in view of Eastman (US 6,411,434).

The Office Action states that Bewersdorf teaches a confocal microscope with a sample carrier comprising a first and a second coverslip, with the second coverslip carrying a mirror and that the mirror "surrounds the sample region". At page 6, the Office Action states that "[f]or light to pass through the sample as required by the Bewersdorf reference there must be some opening in the metal reflective layer", that "[o]therwise all the light incident the metal reflective layer would be reflected and no light would reach the sample" and that "[t]he region of the sample that is within the opening of the metal reflective layer is the sample region and the metal reflective layer would surround the sample reagion".

The Office Action also states that Eastman teaches use of a frame and a cavity between a first and second coverslip, along with a medium filled in the cavity. The Office Action further states that even though "Eastman is silent as to the medium having approximately the same refractive index of the first and second coverslips, the refractive index of the Eastman medium must approximately match the refractive indices of the first and second coverslips because a significant difference between the refractive indices would cause reflection of light at the interface of the medium and the coverslip". In addition, the Office Action states that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the cavity and frame taught

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by Eastman in the Bewersdorf invention for the purpose of holding the sample while protecting the sample from being damaged.

For an obviousness rejection to be proper, the Patent Office must meet the burden of establishing a prima facie case of obviousness. The Patent Office must meet the burden of establishing that all elements of the invention are disclosed in the cited publications, which must have a suggestion, teaching or motivation for one of ordinary skill in the art to modify a reference or combined references.[1] The cited publications should explicitly provide a reasonable expectation of success, determined from the position of one of ordinary skill in the art at the time the invention was made.[2]

As previously discussed by Applicant, Bewersdorf discloses specimen region **23** defined between two cover glasses **22**. As seen in FIG. 4 and in paragraphs 0053 - 0055, the reference teaches that one of the cover glasses has surface **29** which has a partially reflective configuration and includes metallic coating **25**. As also seen in FIG. 4 and in paragraphs 0053-0055, metallic coating **25** faces specimen region **23**. For convenience, paragraphs 0053 – 0055 are reproduced below:

> **FIG. 4** shows the region between the two objectives **6** in magnified fashion. It is evident from **FIG. 4** that the specimen to be examined is arranged in a region between two specimen support units **22**, configured as cover glasses, that delimit specimen region **23**. Immersion medium **24** is present in each case between cover glasses **22** and objective **6**.
>
> According to the present invention, for determination of the illumination state in specimen region **23** of the interference microscope, at least one surface **29** of a cover glass **22** is configured to be detectable by light microscopy. In this context, the light reflected/induced at surface **29** is detected by detector **16**.
>
> Surface **29** is of partially reflective configuration. For that purpose, the surface is equipped with a metallic coating **25** and has a constant reflectance. Two layers that can be excited to fluoresce (not depicted), each configured in the form of a monolayer, are applied onto metallic coating **25**. The two fluorescent monolayers have differing fluorescent properties. The two fluorescent layers are each excited to fluoresce with light of light source **10**. The light reflected and induced at the surface is detected with detectors

1 *In re Sang Su Lee, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).*
2 *In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970);*
Amgen v. Chugai Pharmaceuticals Co., 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996);

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> 16 of the interference microscope. This detection is a confocal detection, detection pinhole 15 being arranged in front of detectors 16. Detection pinhole 15 is arranged in a plane corresponding to specimen plane 26 of objectives 6. The two specimen support units 22 are cover glasses, only one of which comprises a coating 25. Said coating is applied onto the surface of the cover glass facing toward the specimen.

Since surface 29 has a partially reflective configuration, metallic coating 25 is capable of transmitting some of the light and therefore does not require an opening for allowing light to pass. Furthermore, since only one of cover glasses 22 is coated, the incident beam can be directed through the uncoated cover glass to traverse a sample in specimen region 23 before reaching metallic coating 25 at surface 29.

That no opening in the metallic coating is disclosed, suggested or contemplated by Bewersdorf is made clear at paragraph 0019, which teaches that the metallic coating has a degree of reflection that preferably is constant over the entire surface:

> At least one planar area of the specimen support unit could be of partially reflective configuration. For that purpose, the surface could be coated. In particular, the surface could be coated in such a way that it possesses a defined degree of reflection that preferably is constant over the entire surface. The coating of the surface could be wavelength-dependent so that, for example, only light of a specific wavelength is reflected at the surface coating. A metallic or dielectric coating is provided as the surface coating; a dielectric or metallic/dielectric hybrid coating would also be conceivable.

See also Bewersdorf at paragraph 0055.

Thus contrary to the position set forth in the Office Action, Bewersdorf does not disclose or suggest a first and second coverslip, with the second coverslip carrying a mirror, wherein the mirror surrounds a sample region. Nor does the reference disclose or suggest that the sample region is defined on the second coverslip.

Eastman et al. teach a cassette for facilitating optical sectioning of a retained tissue specimen. As with Bewersdorf, there is no disclosure or suggestion in Eastman et al. regarding a coverslip carrying a mirror, wherein the mirror surrounds a sample region which is defined on the coverslip.

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Therefore, as previously submitted by Applicant, neither reference, separately or in combination, discloses or suggests a sample carrier for a confocal microscope, comprising a first coverslip and a second coverslip, wherein the second coverslip carries a mirror, wherein the mirror surrounds a sample region which is defined on the second coverslip, a frame which holds the first and the second coverslip and thereby provides a cavity between the first and the second coverslip and a medium filled in the cavity, which has approximately the same refractive index as the first and the second coverslip.

With respect to Claim 8, the Office Action states that Bewersdorf teaches the invention as claimed but lacks reference to a circular sample region and that Eastman teaches the use of a circular sample region.

However, Claim 8 is directed to an aspect of the sample carrier in which the mirror is embodied as a circular ring around the sample region.

As discussed above, Bewersdorf teaches cover glass **22**, having surface **29** which "is equipped with a metallic coating **25** and has a constant reflectance". See, e.g., Figure 4 and paragraphs 0053-0055 of the cited document.

There is no disclosure or suggestion in Bewersdorf regarding a mirror which is embodied as a circular ring around a sample region which is defined on the coverslip, as specified in Claim 8.

Eastman et al. do not remedy the lack of relevant disclosure of Bewersdorf. Eastman et al. teach a cassette for facilitating optical sectioning of a retained tissue specimen. As with Bewersdorf, Eastman et al. neither disclose, nor suggest the presence of a mirror embodied as a circular ring around a sample region which is defined on the coverslip.

Thus, neither publication, alone or together, teaches or suggests Applicant's Claim 8.

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Therefore Claims 1, 2, 4, 5, 7-13 meet the requirements of 35 U.S.C. 103(a) over Bewersdorf (US 2002/0105722) in view of Eastman et al. (US 6,411,434).

Rejection of Claim 3

Claim 3 was rejected under 35 U.S.C. 103(a) over Bewersdorf (US 2002/0105722) in view of Eastmann (US 6,411,434) as applied to Claim 1 above, and further in view of Lakowicz (US 2002/0160400).

The Office Action states that Bewersdorf in combination with Eastman teach the invention as claimed but lacks reference to quartz and glycerol and that Lakowicz teaches the use of quartz to create the coverslips and the use of glycerol as a means to fill the cavity of a microscope slide. The Office Action further states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Bewersdorf invention include quartz coverslips and glycerol for the purpose of efficiently transmitting light through the coverslips and protecting the sample.

As discussed above, neither Bewersdorf, nor Eastman et al., separately or in combination, teaches or suggests Applicant's sample carrier as set forth in Claim 1.

Lakowicz discloses compositions and methods for increasing the intrinsic fluorescence of biomolecules by positioning a metal particle and a biomolecule at a distance apart sufficient to increase the radiative decay rate of the biomolecule. As seen, for instance, with respect to figures such as 1A, 1B or 2A-2C, the reference discloses the use of quartz plates. In paragraph 0092, the reference teaches that proteins can be arrayed on metal surfaces and that glycerol is used to prevent evaporation:

> To prevent evaporation of the nanodroplets, 40% glycerol is included in the protein samples. Nanoliter droplets of 40% glycerol remain hydrated, even when left exposed to the atmosphere overnight.

See also paragraph 0096 of Lakovicz.

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As with Bewersdorf, and Eastman et al., there is no disclosure or suggestion in Lakowicz regarding a sample carrier for a confocal microscope comprising a first coverslip and a second coverslip, wherein the second coverslip carries a mirror; wherein the mirror surrounds a sample region which is defined on the second coverslip; a frame which holds the first and second coverslip and thereby provides a cavity between the first and the second coverslip; a medium filled in the cavity, which has approximately the same refractive index as the first and the second coverslip.

Thus none of the cited publications, separately or in combination, teaches or suggests Applicant's Claim 3. Therefore, Claim 3 meets the requirements of 35 U.S.C. 103(a) over Bewersdorf in view of Eastman and further in view of Lakovicz.

Rejection of Claim 6

Claim 6 is rejected under 35 U.S.C. §103(a) over Bewersdorf (U.S. Patent Application Publication No. 2002/0105722) in view of Eastman (U.S. Patent No. 6,411,434) and further in view of Aagard (U.S. Patent No. 3,720,924).

The Office Action states that the combination of Bewersdorf and Eastman teaches the invention, but lacks reference to the use of aluminum in the mirror and that Aagard teaches the use of aluminum to create a mirror in a microscope. The Office Action further states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Bewersdorf mirror made of aluminum as taught by Aagard for the purpose of reflecting light in the visible wavelength range.

As discussed above, neither Bewesrdorf, nor Eastamn, alone or together, discloses or suggests Applicant's claimed sample carrier for a confocal microscope.

Aagard discloses an optical mass memory utilizing a rotatable substrate and does not remedy the deficiencies of Bewesrdorf, and/or Eastamn.

Thus none of the cited publications, separately or in combination, discloses or suggests Applicant's invention as set forth in Claim 6. Therefore, Claim 6 meets the

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requirements of 35 U.S.C. §103(a) over Bewersdorf in view of Eastman and further in view of Aagard.

Applicant believes that the present application is in condition for allowance. A Notice of Allowance is respectfully solicited. Should any questions arise, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,
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